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OFFICE MACHINES USED IN BUSINESS TODAY.

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INTERVIEWS OF 239 BUSINESSES OF THE BAY CITY STANDARD METROPOLITAN STATISTICAL AREA OF MICHIGAN PROVIDED INFORMATION ON (1) THE TYPE AND NUMBER OF MACHINES USED IN BUSINESS, (2) THE TRAINING DEMANDED BY EMPLOYERS FOR PERSONNEL USING THIS OFFICE EQUIPMENT, (3) THE EXTENT OF ON-THE-JOB TRAINING GIVEN BY EMPLOYERS, (4) THE IMPLICATIONS FOR VOCATIONAL EDUCATION, AND (5) A SURVEY RESEARCH METHODOLOGY WHICH WOULD POSSIBLY BE USEFUL TO OTHER COMMUNITIES IN OBTAINING ACCURATE LOCAL DATA. AN ANALYSIS OF DATA FOCUSED ON EIGHT MACHINES--ADDING-CALCULATING, BILLING-BOOKKEEPING, COPYING, DICTATING, DUPLICATING, ELECTRONIC ACCOUNTING, ELECTRONIC DATA PROCESSING, AND TYPEWRITERS. SOME CONCLUSIONS WERE--(1) ELECTRIC MACHINES, EXCLUDING TYPEWRITERS, WERE MORE POPULAR THAN THEIR MANUALLY OPERATED COUNTERPARTS, (2) BUSINESSMEN DID NOT DEMAND THAT THEIR EMPLOYEES HAVE TRAINING AND EXPERIENCE IN OFFICE MACHINES WITH THE EXCEPTION OF TYPEWRITERS, AND (3) APPROXIMATELY ONE-THIRD OF THE COMPANIES REPORTED THAT THEY ADMINISTERED SOME TYPE OF ON-THE-JOB TRAINING. IT WAS RECOMMENDED THAT NO ADDITIONAL STATE OR FEDERAL FUNDS BE ALLOCATED FOR THE PURCHASE OF OFFICE MACHINES WITH THE EXCEPTION OF TYPEWRITERS, AND THAT FUNDS EXPENDED SHOULD BE USED TO RENT, NOT PURCHASE, EQUIPMENT. THE INSTRUMENT WAS TOO COMPLICATED FOR OPTIMUM ANALYSIS, AND THE USE OF AMATEUR INTERVIEWERS PRESENTED PROBLEMS IN COLLECTING DATA. THE INSTRUMENT AND TABULAR DATA ARE INCLUDED. (PS)

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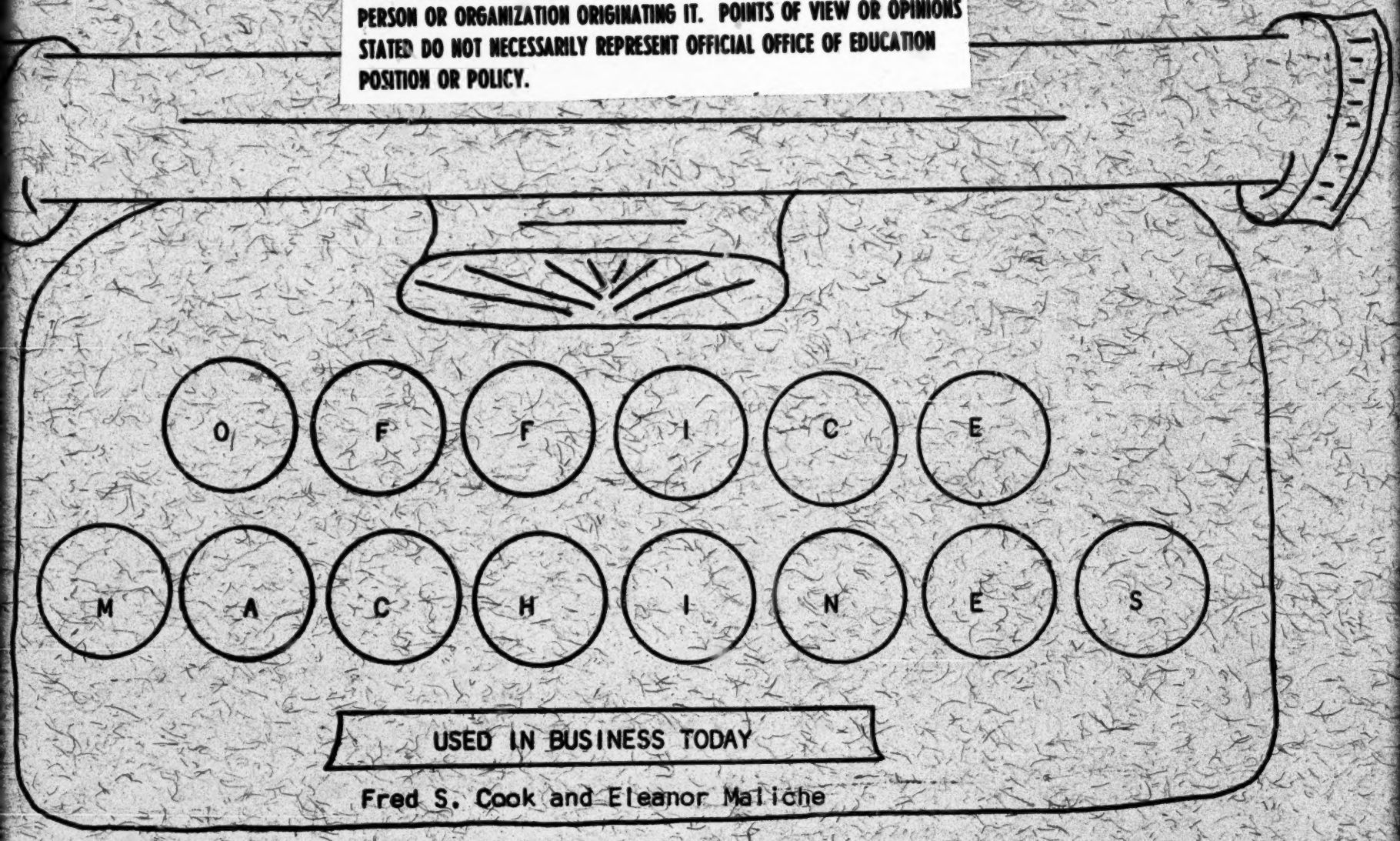

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PREFACE

Delta Pi Epsilon, a national honorary graduate business education fraternity, through it's National Research Committee suggested that a study be made concerning the types of office machines used by business and industry.

Kappa Chapter (University of Michigan) agreed to conduct a pilot study for the fraternity. Drs. Fred S. Cook and Eleanor Maliche (members of Kappa Chapter) prepared and submitted a research proposal which was funded in 1964 by the Michigan Department of Education.

Members of Kappa Chapter working with Drs. Cook and Maliche collected the data. However, Dr. Maliche had the primary responsibility for selecting the survey site and sample of companies, supervision of the interviewing and coding personnel, and preliminary analysis of the data. The responsibility for the final content as well as any errors of omission or commission are the responsibility of Dr. Cook.

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SUMMARY

Introduction:

This pilot study of implications for business and distributive education of the current and projected use of machines in business, and of the necessary in-school training for these machines was conducted in Bay City, Michigan. Survey research techniques were utilized and 239 companies were interviewed.

Findings:

1. Companies had about the same number of typewriters and adding/calculating machines.

2. Most of the adding/calculating machines were electric; most of the typewriters were manual.

3. The larger the company the greater the variety and number of office machines that are used.

4. Twenty seven percent of the companies had copying and duplicating machines.

5. Eighteen percent of the companies had bookkeeping machines and approximately 14 percent had dictating equipment.

6. Most companies did not require training on office machines prior to employment with the exception of typewriters.

7. Most companies did not administer skill-tests as a prerequisite for hiring.

8. Approximately one-third of the companies administer some type of on-the-job training. The larger the company the more likely the employee will receive some type of on-the-job training.

OFFICE MACHINES USED IN BUSINESS TODAY

by
Fred S. Cook and Eleanor Maliche

STATEMENT OF THE PROBLEM:

Statement: This pilot study is concerned with the implications for business and distributive education of the current and projected use of machines in business and of the necessary in-school training for these machines.

Significance: The types of machines and their relative use in business are undergoing constant change. Of importance to curricula planning is the knowledge of what machines are being used in business, the degree of training demanded, and whether this demand will continue to exist.

Machines have been an integral part of the business program for many years. Investments in educational time and equipment are heavy. It is appropriate that the most current and accurate data be made available so that optimum instruction may result.

Of particular significance for our consideration are the following points:

1. Up to this time no scientific survey has been made of this problem.
2. Machines are being taught today in schools even though the demand has declined. For example,
   a. The key-driven calculators are still being taught in the schools despite the fact that they are being replaced by 10-key adding machines in the business office. The demand for key-driven calculators has

diminished to such an extent that both major manufacturers have closed out their extensive private training programs.

b. One survey showed that not a single company studied was using the hectograph or stencil process. Instead, companies were using an offset process. At the same time, the school districts serving these companies had only the hectograph and mimeograph and no offset.

3. There is no evidence from business concerning the degree of training that is demanded for people who use common office appliances such as the adding machines, voice recording machines, duplicating machines, etc.

4. More and more schools today are equipping their business departments with office appliances. We need research evidence to present to school districts concerning the desirability of providing business machines training and of the rationale for equipment purchases.

OBJECTIVES:

Principle reasons for initiating this pilot study were the needs to:

1. Develop a systematic, accurate method of collecting significant data regarding the use of office machines in business.

2. Determine the feasibility for:

   a. Expanding the study to obtain nation-wide data, and

   b. Repeating the study in five years using the research design developed in this pilot study in order to observe the change, if any, in the use of machines in the office.

Specifically, the intent of this study was to obtain the following information:

1. Type and number of machines used in business.

2. Training demanded by employers (by type and size of business) for personnel using this office equipment.

3. Extent of on-the-job training given by employers.

4. Implications for vocational education.

5. A survey research methodology which would provide a method for other communities to obtain accurate local data.

PROCEDURES:

The Interview Schedule. A survey instrument previously constructed by a Research Committee of Delta Pi Epsilon[1] formed the basis for the interview schedule used in this study. At an initial meeting of a "Kappan"[2] Research Committee, this instrument was revised, and machines were grouped by type for ease in interviewing. Subsequently, this instrument was refined, tested, and revised until the instrument was in its current form (see Appendix A). The pre-testing was done by "Kappans" with companies in the Detroit area. Each pre-testing was preceded by a briefing on the use of the instrument in interviewing.

Selection of Sample Community. The Standard Metropolitan Statistical Area[3] (SMSA) of Bay City, Michigan was selected as the community in which the study was to be conducted because of:

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[1] A national honorary graduate business education fraternity.

[2] A "Kappan" is a member of Kappa Chapter of Delta Pi Epsilon at the University of Michigan.

[3] The population of Bay City, Michigan is 107,042; the BCSMSA rank is 192 (Source: United States Bureau of The Census Statistical Abstract, 86th Edition, 1965, p. 17).

1. Size of Community:

   a. We wanted a community size we could handle with the available financial resources since we wished to take a sample of the business and industrial community.

   b. We wanted a city in which the business community was concentrated (i.e., not spread out over a large area) since the time our interviewers would have available was very limited.

2. Diversity of Business and Industry:

   According to the Michigan Employment Security Commission (MESC) and to various economic reports, there is a good representation of business and industry as to type.

3. Typical Community:

   The Bay City Standard Metropolitan Statistical Area is fairly representative for an area of its size. Indications that Bay County closely parallels the state pattern is found by comparing the following selected economic and social characteristics:[4]

Characteristics	State Pattern	Bay County Pattern
Percent Rural Farm	5.6	9.5
Median School Age	19.8	10.0
Non-Worker Ratio	1.7	1.7
Percent Employed in Manufacturing	38.0	41.0
Percent Employed in White Collar Occupations	40.0	37.0
Median Income of Families	$6,256	$6,041

4. Cooperation of Local Business and Civic Officials:

   Persons representing the Chamber of Commerce, Development Council, and private business were most cooperative and receptive. They generously offered facilities and services.

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[4] Michigan Economic Development Department. Economic Data Sheet, 1962.

5. Location in The State:

Bay City is easily accessible by freeways from all parts of the State. This accessibility was important for "Kappans" who had to come from diverse areas of the State to participate in the interviewing field operation.

Selection of Sample. One of the major problems in drawing a sample of companies in a community is to obtain a complete list of businesses in that community. Several sources were considered; however, all were incomplete in one or more aspects, in addition to being impractical to use.

We decided to experiment with the "yellow pages" of the Bay County telephone directories. This approach was used when we determined that a very high percentage of businesses that have telephones are automatically listed in the "yellow page" section of the telephone directory. It was felt that the very small percentage of businesses without telephones would not effect our findings.

In order to obtain representative data the sample was to be proportionately represented by:

a. Companies of Various Types.

b. Companies of Various Sizes.

How the Yellow Pages were used:

1. Companies were assigned SIC[5] Codes based upon the index classification under which they were listed in the

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[5]Standard Industrial Classifications: I. Agriculture, Forestries, and Fisheries; II. Construction; III. Durable Manufacturing; IV. Non- Durable Manufacturing; V. Transportation, Communication, and Other Public Utilities; VI. Wholesale and Retail Trade; VIII. Finance, Insurance, and Real Estate; VIII. Business Repair Services; IX. Personal Services; X. Professional Services; and, IX. Public Services.

Directory of Yellow Pages. In case of doubt about actual classifications, references were made to several business directories for Bay City.

Companies falling within each classification were tabulated. Percentages of the total universe were obtained for each SIC so that it would be known to what extent each SIC should be represented in the sample if we desired a stratified random sample (e.g., if the total number of firms in a community equals 1,000 and construction firms constitute 20 of this total, then construction firms represent two percent of the total population. Therefore, if the sample size is to be 200 cases, four construction firms should be included).

2. The time and finances available precluded the drawing of a stratified random sample; therefore, it was decided to draw a straight random sample. We were gratified to discover that this sample was very close to the desired SIC representation.

As each company was selected, its name was typed on a 3 X 5 card with its SIC code in the upper left-hand corner and its location in the "yellow pages" (i.e., page number and column) in the upper right-hand corner.

Field Procedures.

1. Contacting the companies by mail prior to the interview:

A letter on Wayne State University stationery[6]

a. The project: What it was and why it was being done.

b. How the company was selected.

c. Who would conduct the interview.

d. The approximate length of the interview (i.e., how long the interview would take).

e. A second contact would be made by telephone prior to the interview.

2. Contacting the companies by telephone prior to the interview:

Each company in the sample was called the week before the interview in order that the following could be determined:

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[6]This pilot study was funded by the Michigan Department of Education as a result of a proposal submitted by Drs. Fred S. Cook and Eleanor Maliche of Wayne State University.

a. Who was to be interviewed (i.e., the name of the respondent).

b. The most convenient time for the interview.

In several cases, it was necessary to explain the project because the person contacted has not seen the letter or the person was dubious as to the intent of the contact. A few felt that the project was a "gimmick" to sell machines; some felt that it was the government's "backhanded" way of investigation.

3. Setting up the interviews:

In order to conserve the interviewer's time and to facilitate getting around town, it was imperative that there be some order as to what companies would be assigned to each interviewer. Therefore,

1. The companies were separated according to their geographic location in town.

2. Within each location the companies were grouped according to:

   a. proximity to one another, and
   b. anticipated length of the interview.

The Interviewers. The interviewers were "Kappans" or prospective members of Delta Pi Epsilon from the University of Michigan and Wayne State University. All were in-service teachers with one exception--a graduate student who had gone directly into full-time graduate work after completing the baccalaureate program. All were secondary school teachers except for five college instructors. The interviewers came from various parts of the state and represented many school districts.

Training the Interviewers. The interviewers met in the afternoon of the day before the interview field operation was to begin. At this session, the following was accomplished:

1. The purpose and nature of the project were explained.

2. A brief explanation was given as to why Bay City was chosen and how the sample was selected.

3. The interview instrument was gone over thoroughly question by question.

4. Types of anticipated answers and the correct recording procedures were discussed in detail.

5. The interviewers were instructed how to phrase their questions; how not to involve themselves in the question; and, when and how to probe.

6. The interviewers were also instructed:

   a. How to contact the respondent.
   b. How to begin the interview.
   c. How to obtain information for the face sheet.
   d. How to terminate the interview.
   e. To notify the project office for assistance with problems that they might encounter and be unable to solve while working in the field.

7. There was some role playing to demonstrate techniques of interviewing with our instrument.

8. Each interviewer was assigned an "exercise" company for the purpose of trying out the instrument and the techniques discussed. All interviews were completed prior to the dinner hour and the interviewers reconvened after dinner for the second training session.

At the second training session the following was accomplished:

1. Interviewers had an opportunity to discuss and compare experiences they encountered in their "interviewing" exercise.

2. Interviewing assignments were given out.

3. All necessary materials were distributed:

   a. The interview instruments.
   b. 3 X 5 cards with machine listings.
   c. WSU Identification Cards.
   d. Clip boards.
   e. Red rope envelopes to carry supplies.

A project office was set up to which interviewers reported and returned completed interviews.

LIMITATIONS OF THE STUDY:

There are several basic limitations inherent in this study that should be emphasized:

1. The limitation of selecting a given community as a "sample" that is representative of the State of Michigan.

2. Possible sampling errors in the procedures used for selecting the respondents.

3. The problems in any pilot study whose primary purposes are to develop methods and procedures.

We found, for example, that the instrument--although it had been field tested---was too complicated for optimum analysis. Also, the use of amateur interviewers presented problems in collection of the data. Finally, the requested funds were insufficient to do the complete tabulations and computer analysis that might have been done with the tremendous amount of data that were available from the pilot study instrument.

FINDINGS:

Of the 274 companies in the sample, data were collected on 239 companies. The remaining 35 companies were not interviewed due to:

a. 15 refusals

b. 13 respondents that we were unable to locate.

c. 7 companies that did not fit into our universe; that is, the company had gone out of business, had moved out of Bay City, etc.

Table 1 below shows the distribution of companies interviewed by type (Standard Industrial Classifications) and size (total number of employees) of business.

Table 1.--DISTRIBUTION OF COMPANIES BY TYPE AND SIZE OF BUSINESS

TYPE OF COMPANY	SIZE OF COMPANY BY TOTAL NUMBER OF EMPLOYEES						TOTAL BY TYPE
	0[a]	Less than 4	4-19	20-99	100-499	More than 500	
Agriculture, Forestries, and Fisheries	-	-	1	-	-	-	1
Construction	4	9	1	4	-	-	18
Manufacturing: Durable	-	3	1	5	8	2	19
Manufacturing: Non-Durable	-	1	2	2	5	-	10
Transportation, Communication and Other Public Utilities	-	5	1	-	1	-	7
Wholesale and Retail Trades	2	53	31	11	3	-	100
Finance, Insurance, and Real Estate	-	10	9	1	1	-	21
Business and Repair Services	-	14	4	1	-	1	19
Personal Services	-	10	2	3	-	-	15
Professional Services	2	8	6	1	1	1	19
Public Services	1	1	6	-	1	1	10
Total by Size	9	114	64	28	20	4	239

[a]Size not specified.

Several significant items from Table 1 should be kept in mind as the findings of this study are analyzed:

1. There was a heavy concentration (42%) of respondents in the wholesale and retail trades. The next largest group of respondents (9%) was in finance, insurance, and real estate.

2. Almost half of the companies (48%) had fewer than 4 employees. The next largest group (27%) employed between 4-19 employees; while, less than 2 percent of the companies had more than 500 employees.

3. This concentration by type and size of business is not atypical for Bay City. Most communities would have a high concentration of small businesses as well as a high concentration of businesses in the wholesale and retail trades. For example:

   a. Bay County (location of Bay City) lies between populous Wayne County and rural Manistee County, and differs very slightly in percent of businesses employing between 1-3 employees: 60.3 percent for Bay County, 61.8 percent for Manistee County, and 59.7 for Wayne County.[7]

   b. Bay County has 45.2 percent of their businesses in the wholesale and retail trades; while, Manistee County has 44.3 percent and Wayne County 40.5 percent of their businesses in the wholesale and retail trades.[8]

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[7] County Business Patterns: East North Central States, Michigan and Wisconsin (Part 4A, First Quarter 1962, U. S. Government Printing Office, Washington, D. C., 1963), pp. 24-25, 73-74, and 101-109.

[8] Ibid.

Data were collected on 10 types of office machines:

1. Adding/Calculating
2. Billing Bookkeeping
3. Copying
4. Dictating
5. Duplicating
6. Electronic Accounting Machines (EAM)
7. Electronic Data Processing (EDP)
8. Typewriters
9. Cash Registers
10. Miscellaneous

Our analyses, however, will be focussed on only the first 8 types of machines because:

1. We found of the 72 companies that had cash registers and with only 2 exceptions they did not demand training and/or experience as prerequisites for hiring. Consequently, since this machine is not technically office equipment, we did not include cash registers in our tables.

2. Approximately one-half (135) of the companies indicated they had some type of miscellaneous equipment (e.g., addressographers, check protectors and writers, PBX machines, postage meters, etc.). With only a few exceptions they did not demand training and/or experience as prerequisites for hiring; and, since there were so few of any single item these machines were not included in our tables.

Table 2 on the next page shows the distribution of companies which have these 8 types of machines.

Table 2.--NUMBER AND PERCENT OF COMPANIES HAVING MACHINES STUDIED

TYPES OF MACHINES	COMPANIES THAT HAVE MACHINES		COMPANIES THAT DID NOT HAVE MACHINES	
	Number	Percent	Number	Percent
Adding/Calculating	192	80.3	47	19.7
Billing-Bookkeeping	43	18.0	196	82.0
Copying.....	65	27.1	174	72.8
Dictating.....	33	13.8	206	86.2
Duplicating.....	64	26.8	175	73.2
EAM.....	9	3.8	230	96.2
EDP.....	1	.4	238	99.6
Typewriters.....	186	77.8	53	22.2

An analysis of Table 2 shows that of 239 companies--

a. 192 companies had adding/calculating machines and 186 companies had typewriters.

b. 65 companies had copying machines and 64 companies duplicating machines.

c. 43 companies had billing-bookkeeping machines and 33 companies had dictation machines.

d. 9 companies had EAM equipment and only 1 company had a EDP installation.

It is interesting to note that although more companies had adding/calculating machines (192) than typewriters (186), more companies actually owned more typewriters (818) than adding/calculating machines (793). (See Table 3 for total number of machines owned by the companies that were interviewed.) It is not surprising that relatively few companies had EAM and EDP installations since a relatively small percentage of our companies had more than 20 employees.

Table 3.--TOTAL NUMBER OF MACHINES OWNED BY MANUAL AND EIECTRIC

Types of Machines	Number of Machines	Number of ELECTRIC Machines	Number of MANUAL Machines
Adding/Calculating	793	599	194
Billing-Bookkeeping	110	104	6
Copying.....	98	98	--[a]
Dictating.....	105	105	--[a]
Duplicating.....	96	59	37
EAM.....	68	68	--[a]
EDP.....	3	3	--[a]
Typewriters.....	818	244	574
Total	2,091	1,280	811

[a]These machines are always electrically operated.

Analysis of Table 3 shows that typewriters (818) and adding/calculating machines (793) form the majority of the total number (2,091) office machines owned by the companies that were interviewed; while, Table 2 on page 13 shows that of 239 companies, 192 companies had adding/calculating machines and 182 companies had typewriters. This latter finding--although we do not have the data--seems to be based on two factors:

1. The large number of companies (114) having less than 4 employees; and,

2. The large number of wholesale and retail firms (100) included in the sample.

It is apparent in every case--excluding typewriters--where a machine can be electrically or manually operated that electrically operated equipment is more predominant. Although only 29 percent of the

typewriters were electric, there would be very few schools that would have this percentage (29%) of their typewriters electrically operated.

It might be assumed--here, again, we do not have the data--that the larger the company the more electric typewriters; conversely, the smaller the company the less likely they would have electric typewriters. This may be directly related to the cost of these machines; while, another factor may be the large number of wholesale and retail firms included in the sample.

Table 4 on the next page shows the number of companies by size that demand pre-employment training and/or experience for each of the machines studied in this survey.

Analysis of Table 4 shows that of those companies having a specific type of machine relatively few companies demand pre-employment training and/or experience as prerequisites for employment; even for typewriting 59 companies reported they did not demand pre-employment experience. However, it can be noted that the larger the company the more likely it is to demand pre-employment training and/or experience. For example, 3 of the 4 companies having more than 500 employees demand pre-employment training for typewriting.

In the case of the EAM machines, only 1 of the 7 companies having this type of equipment demands pre-employment training and/or experience as prerequisites for hiring. It appears that pre-employment training and/or experience are not demanded as prerequisites for hiring on any of the machines discussed in Table 4 because of one or more of the following:

Table 4.--NUMBER OF COMPANIES BY SIZE DEMANDING PRE-EMPLOYMENT TRAINING AND/OR EXPERIENCE BY TYPES OF MACHINES STUDIED

TYPES OF MACHINES	SIZE OF COMPANY BY NUMBER OF EMPLOYEES							Number of Companies That Did Not Demand Training and/or Experience	Total Number of Companies Answering	Number of Companies That Have Machines
	0[a]	Less than 4	4-19	20-99	100-499	More than 500	Total			
Adding/Calculating	3	6	11	10	4	2	36	132	168	192
Billing-Bookkeeping	3	-	2	2	4	1	12	25	37	43
Copying.....	-	2	2	1	1	1	7	51	58	65
Dictating.....	1	1	4	2	2	2	12	19	31	33
Duplicating.....	1	1	5	1	-	1	9	45	54	64
EAM.....	-	-	-	1	-	-	1	6	7	9
EDP.....	-	-	-	-	-	-	--	--	--	1
Typewriters.....	6	24	36	20	20	3	109	59	168	186
	N=9	N=114	N=64	N=28	N=20	N=4				

[a]Size not specified.

1. These machines are so simple to operate that no training is demanded because they can be quickly learned on the job; for example, manufacturers of Rotary Adding/Calculators have have consistently advertized that an employee can learn to operate their machines in less than an hour.

2. Companies prefer to train their personnel in the use of office equipment.

3. Companies have found such a shortage of trained workers that they must train prospective employees who show an aptitude for operating this type of office equipment.

Analysis of Table 5 on the next page shows that most of the companies have no skill requirements for the machines studied. Of the companies that have skill requirements:

1. The majority determine if the applicant has the desired skill(s) during the interview or they observe a new employee on the job.

2. Previous experience is considered important by those few companies answering this question for employees who will be operating copying and dictating-transcribing machines.

3. Seventeen (17) of the 176 companies having typewriters demand that the employee had a course(s) in school; and, only 8 out of 157 companies having adding/calculating machines have this requirement.

4. Formal testing, in most cases, is infrequently given or not at all; although, 17 of 176 companies indicate that they administer formal typewriting tests--this is approximately 10 percent of 176 companies.

Table 5.--METHODS UTILIZED BY COMPANIES TO DETERMINE SKILLS OF PROSPECTIVE EMPLOYEES BY TYPES OF MACHINES STUDIED

TYPES OF MACHINES	METHODS UTILIZED TO DETERMINE SKILLS BY NUMBER OF COMPANIES					NUMBER OF COMPANIES THAT HAVE NO SKILL REQUIREMENTS	TOTAL NUMBER OF COMPANIES ANSWERING	NUMBER OF COMPANIES THAT HAVE MACHINES
	Interview and On-The-Job Tryout	Previous Employment	Had Course(s) In School	Formal Testing	Total			
Adding/Calculating	23	2	8	2	35	133	168	192
Billing-Bookkeeping	3	5	3	1	12	25	37	43
Copying	4	3	-	-	7	51	58	65
Dictating	6	4	1	1	12	19	31	33
Duplicating	8	-	1	-	9	45	54	64
EAM	-	-	-	1	1	6	7	9
EDP	-	-	-	-	-	-	-	1
Typewriters	72	3	17	17	109	59	168	186

Table 6 on the next page shows the distribution of companies in respect to their size and to the methods utilized to determine degree of skill-proficiency of prospective employees by the types of machines (excluding EAM and EDP equipment) studied. The EAM machines were ommitted from the table because of seven companies having this type of equipment, only 1 company (employing between 20-99 employees) administers a formal test to determine skills; and, the 1 company having EDP equipment did not answer this question.

Analysis of Table 6 shows that--

1. More companies utilize "previous experience" for bookkeeping machines that the other three methods although each method is used by, at least, 1 company.

2. Twenty-three (23) of the 35 companies that require skills on adding/calculating machines utilize the "interview and tryout" process.

3. Only 2 out of 4 methods are utilized for copying machines and they are almost equally divided by "interview and tryout" and "previous experience."

4. Half of the companies--6 out of 12--utilize the "interview and tryout" method for dictating equipment, while 8 out of 9 companies use this procedure for duplicating equipment.

5. More companies are concerned with determining skill-proficiency on typewriters (by some method) than for any other type of office equipment. But, even here, 72 out of 109 companies which have a skill requirement for typewriting determine the level of skill-proficiency through the "interview and tryout" process.

Table 6.--DISTRIBUTION OF COMPANIES BY SIZE THAT UTILIZE METHODS TO DETERMINE SKILLS OF PROSPECTIVE EMPLOYEES FOR SEVEN OF THE EIGHT TYPES OF OFFICE MACHINES STUDIED

SIZE OF COMPANY BY NUMBER OF EMPLOYEES	ADDING/ CALCULATING				BILLING-BOOKKEEPING				COPYING				DICTATING				DUPLICATING				TYPEWRITERS			
	Interview & Tryout	Previous Experience	Schooling	Formal Testing	Interview & Tryout	Previous Experience	Schooling	Formal Testing	Interview & Tryout	Previous Experience	Schooling	Formal Testing	Interview & Tryout	Previous Experience	Schooling	Formal Testing	Interview & Tryout	Previous Experience	Schooling	Formal Testing	Interview & Tryout	Previous Experience	Schooling	Formal Testing
Size Unspecified	3	-	-	-	1	1	1	-	-	-	-	-	-	1	-	-	1	-	-	-	4	-	-	2
Less than 4	5	-	-	1	-	-	-	-	1	1	-	-	1	-	-	-	1	-	-	-	20	-	2	2
4- 19	7	2	1	1	1	1	-	-	2	-	-	-	2	1	-	1	5	-	-	-	22	1	6	7
20- 99	5	-	4	-	-	1	1	-	1	-	-	-	1	-	1	-	-	-	1	-	13	2	3	2
100-499	3	-	2	-	1	1	1	1	-	1	-	-	2	-	-	-	-	-	-	-	11	-	6	3
More than 500	-	-	1	-	-	1	-	-	-	1	-	-	-	2	-	-	1	-	-	-	2	-	-	1
Total	23	2	8	2	3	5	3	1	4	3	-	-	6	4	1	1	8	-	1	-	72	3	17	17

PLEASE NOTE: This table should be read as follows:

Companies employing more than 500 employees utilize schooling for adding/calculating; previous experience for bookkeeping machines; previous experience for copying machines; previous experience for dictating machines; interview and on-the-job tryout for duplicating equipment; and, interview and on-the-job tryout for typewriters.

The distribution of companies by size that give on-the-job training is shown in Table 7 below.

Table 7.--ON-THE-JOB TRAINING BY SIZE OF COMPANY

SIZE OF COMPANY BY NUMBER OF EMPLOYEES	LENGTH OF TRAINING PERIOD		NUMBER OF COMPANIES THAT DO NOT PROVIDE TRAINING	NO ANSWER	TOTAL NUMBER OF COMPANIES INTERVIEWED BY SIZE
	More than 1 Day	Less than 1 Day			
Size Unspecified	3	2	-	4	9
Less than 4	6	23	22	63	114
4- 19	23	15	1	25	64
20- 99	15	6	1	6	28
100-499	16	2	-	2	20
More than 500	4	-	-	-	4
Total	67	47	24	100	239

Of 239 companies interviewed, 114 (48%) indicate that they give some type of on-the-job training. Apparently, most of the respondents that give training do so on an informal as needed basis. This training may range from a few minutes up to an hour or more each day for several weeks. Since no formal classes were identified, presumably, on-the-job training consisted of primarily having the employee operate the machine with an experienced employee giving instructions as needed. Here, again, it appears that the larger the company the longer the training period.

The distribution of companies that give on-the-job training by type of office machine studied is shown in Table 8 on the next page.

Table 8.--DISTRIBUTION OF COMPANIES THAT GIVE ON-THE-JOB TRAINING BY TYPES OF MACHINES STUDIED

TYPES OF MACHINES	LENGTH OF TRAINING PERIOD		DO NOT GIVE TRAINING AND NO ANSWER	NUMBER OF COMPANIES THAT DO NOT HAVE MACHINE
	More than 1 Day	Less than 1 Day		
Adding/Calculating	30	38	124	47
Billing-Bookkeeping	31	5	7	196
Copying.....	10	29	26	174
Dictating.....	11	6	16	206
Duplicating.....	10	25	29	175
EAM.....	7	1	1	230
EDP.....	1	--	--	238
Typewriters.....	14	8	164	53

The more complex the equipment, apparently, the longer the period before the respondent feels the employee is competent. For example, 31 of 36 companies require more than one days' training for bookkeeping machines; whereas, 29 of 39 companies require only a few hours of training on copying machines.

CONCLUSIONS:

Based upon the data collected in this study the following seem appropriate:

1. There appears to be a positive relationship between the size of the company and the types of machines utilized. That is, the larger the company the more likely it will utilize copying, duplicating, EAM, and EDP equipment.

2. Electric machines (excluding typewriters) are more popular than their manually operated counterparts (e.g., businessmen prefer an electrically operated duplicating machine over one that is manually operated). However, it is suspected that the small proportion of electric typewriters reported in this study is due to the factor that almost half of the companies included in the sample had fewer than 4 employees. This seems to indicate that the cost of electric typewriters is too expensive for the small companies.

3. Businessmen do not demand that their employees have training and/or experience in office machines with the exception of typewriters. This low demand for trained and experienced personnel seems to indicate that companies can train their employees (in a relatively short period of time) in the use of office machines.

4. There appears to be a positive relationship between the size of the company and the length of on-the-job training period. That is, larger companies tend to have longer training periods than smaller companies.

5. Approximately one-third of the companies reported that they administer some type of on-the-job training. It appears that this on-the-job training is an informal, over-the-shoulder type of procedure. This further emphasizes the ease with which most office machines can be learned on the job.

6. Of the companies that administer on-the-job training, almost half do so for bookkeeping (46%) and adding/calculating machines (45%).

7. Of the companies which have skill requirements, the majority utilize the method of "interview and on-the-job

tryout" to determine the degree of new employees skill-proficiency on all types of office machines with the exception of bookkeeping equipment.

RECOMMENDATIONS:

The findings of this pilot study as well as the general literature on this topic raise serious questions concerning the purchase of equipment through vocational educational funds. Consequently, it is recommended that--

1. The Michigan Department of Education is urged to co-operate in developing and financing a state-wide study to determine if the findings in the Bay City area are similar in other parts of the state. As part of this proposed study, it is recommended that the instrument in Appendix B (an outgrowth of this pilot study and utilized as part of a research project in Detroit) be used as the basic instrument for collection of the data.

2. No additional state and/or federal funds be allocated for the purchase of office machines with the exception of typewriters.

3. If the State should continue to expend public funds for the acquisition of office machines, these funds should be used to rent not purchase equipment in order that the schools will not be "stuck" with obsolete equipment.

12-15-65:MM

APPENDIX A

Interview Number: _____

SIC: _____

Type of Business: _____

Name: _____ Total Employees: _____

Address: _____ Office Employees: _____

Telephone Number: _____

Date Called: _____ Time: Start _____ Finish _____

Persons Contacted			
Title			
Department			
Extension			

Interview Date: Tuesday, March 31 _____ a.m. _____

Wednesday, April 1 _____ p.m. _____

Preferred Time: _____

Person(s) to see: _____
(name) (title)

Department: _____ Extension: _____

Where is office? (floor, etc.) _____

Parking: _____

Interviewer: _____

Date: _____ Time Started: _____ Completed: _____

Interview not completed because: _____

Firm:

ADDING-CALCULATING

= Yes 0 = No ? = Don't Know 1 = Maybe	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines: Man	Machines: Elec	Persons: M	Persons: F	Extent of use? Da.	Wk.	Mo.	
9 Key-driven														
10 Rotary														
11 Full-bank														
12 10-Key														
13 Printing Calculator														
14 Other:														

**1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

If test: (a) Type of test (content, length in time, etc.)

(b) Standards (how you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S._____ Private Business School_____

H. S. _____ Previous employer _____

College _____

***3. If training is given: (a) how much?_____(b) how long?_____

(c) on what job_____(d) how and by whom: _____

_____

	Next yr?	Within 5 yrs?
4. Do you expect number of persons using these machines to increase		
decrease		
remain same		

Firm:

BILLING BOOKKEEPING

	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines Man	Machines Elec	Persons M	Persons F	Extent of use? Da.	Wk.	Mo.	
15 Typewriter Keyboard														
16 Adding Machine Type														
17 Specially Designed														
18 Other:														

= Yes
0 = No
? = Don't know
1 = Maybe

**1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

If test: (a) Type of test (content, length in time, etc.)

(b) Standards (how you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S. _____ Private Business School _____

H. S. _____ Previous employer _____

College _____

***3. If training is given: (a) how much? _____ (b) how long? _____

(c) on what job _____ (d) how and by whom: _____

_____

4. Do you expect number of persons using these machines to

	Next yr?	Within 5 yrs
increase		
decrease		
remain same		

Firm:

COPYING

= Yes 0 = No ? = Don't know 1 = Maybe	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines: Man	Machines: Elec	Persons: M	Persons: F	Extent of use? Da.	Wk.	Mo.	
23 Thermofax (heat process)														
24 Verifax (dye transfer)														
25 Apeco														
26 Xerox														
27 Other:														

**1. How much skill is required?

2. *How do you determine* this skill? (Interview, test, application, etc.)

If test; (a) Type of test (content, length in time, etc.)

(b) Standards (how you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S. _____ Private Business School _____

H. S. _____ Previous employer _____

College _____

**3. If training is given: (a) how much? _____ (b) how long? _____

(c) on what job _____ (d) how and by whom: _____

_____

4. Do you expect number of persons using these machines to

	Next yr?	Within 5 yrs
increase		
decrease		
remain same		

Firm:

DICTATION-TRANSCRIPTION

= Yes O = No ? = Don't know 1 = Maybe	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines Man	Machines Elec	Persons M	Persons F	Extent of use? Da.	Wk.	Mo.	
28 Dictaphone	✓													
29 Ediphone														
30 Soundscriber														
31 IBM														
32 Other:														

*1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

If test: (a) Type of test (content, length in time, etc.)

(b) Standards (how you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S. _____ Private Business School _____

H. S. _____ Previous employer _____

College _____

*3. If training is given: (a) how much? _____ (b) how long? _____

(c) on what job _____ (d) how and by whom: _____

_____

4. Do you expect number of persons using these machines to

	Next yr?	Within 5 yrs.?
increase		
decrease		
remain same		

Firm:

DUPLICATING

= Yes 0 = No ? = Don't know 1 = Maybe	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines: Man	Machines: Elec	Persons: M	Persons: F	Extent of use? Da.	Wk.	Mo.	
19 Fluid														
20 Stencil														
21 Offset														
22 Other:														

**1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

If test: (a) Type of test (content, length in time, etc.)

(b) Standards (how you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S. _____ Private Business School _____

H. S. _____ Previous employer _____

College _____

***3. If training is given: (a) how much? _____ (b) how long? _____

(c) on what job _____ (d) how and by whom: _____

_____

4. Do you expect number of persons using these machines to

	Next yr?	Within 5 yrs?
increase		
decrease		
remain same		

Firm:

EAM (Punch Card Accounting)

1 = Yes
0 = No
? = Don't know
1 = Maybe

	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines: Man	Machines: Elec	Persons: M	Persons: F	Extent of use? Da.	Wk.	Mo.	
33 Card Punch														
34 Verifier														
35 Sorter														
36 Collator														
37 Reproducing Punch														
38 Gang Summary Punch														
39 Interpreter														
40 Accounting Machine														
41 Other:														

**1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

If test: (a) Type of test (content, length in time, etc.)

(b) Standards (how you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S. _____ Private Business School _____

H. S. _____ Previous Employer _____

College _____

**3. If training is given: (a) how much? _____ (b) how long? _____

(c) on what job _____ (d) how and by whom: _____

_____

4. Do you expect number of persons using these machines to

	Next yr.?	Within 5 yrs?
increase		
decrease		
remain same		

Firm:

EDP

1 = Yes 0 = No ? = Don't know 1 = Maybe	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machines***	Plan to add machine within next 5 yrs.	Approximately how many? Machines: Man	Machines: Elec	Persons: M	Persons: F	Extent of use? Da.	Wk.	Mo.	
42 Computing System														
INPUT PERIPHERAL: 43 Optical Scanner														
44 INPUT Miscellaneous														
OUTPUT PERIPHERAL: 45 Off-line printer														
46 OUTPUT Miscellaneous														

*1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

If test: (a) Type of test (content, length in time, etc.)

(b) Standards (how you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S. _____ Private Business School _____

H. S. _____ Previous Employer _____

College _____

**3. If training is given: (a) how much? _____ (b) how long? _____

(c) on what job _____ (d) how and by whom: _____

_____

4. Do you expect number of persons using these machines to

	Next yr?	Within 5 yrs?
increase		
decrease		
remain same		

Firm:

TYPEWRITERS

1 = Yes
0 = No
? = Don't know
1 = Maybe

	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines: Man	Machines: Elec	Persons: M	Persons: F	Extent of use? Da.	Wk.	Mo.	
1 Elite (Small)														
2 Pica (Big)														
3 Executive (Proportional Spacing)														
4 Selectric (Type Sphere-Stationary Carriage)														
5 Flexowriter (Tape)														
6 Vari-Typer														
7 Teletyper														
8 Other:														

*1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

If test: (a) Type of test (content, length in time, etc.)

(b) Standards (how do you evaluate)

(c) At what level should this training be provided? (In your opinion)

Jr. H.S. _____ Private Business School _____

H. S. _____ Previous Employer _____

College _____

**3. If training is given: (a) how much? _____ (b) how long? _____

(c) on what job? _____ (d) how and by whom? _____

_____

4. Do you expect the number of persons using these machines to

	Next Yr?	Within 5 Yr
increase		
decrease		
remain the same		

rm:

MISCELLANEOUS

= Yes 0 = No ? = Don't know 1 = Maybe	Use Machine Now	Used 1 year ago	Will be using 1-2-5 years from now	Demand training prior to employment**	Train employees to use machine***	Plan to add machine within next 5 yrs.	Approximately how many? Machines Man	Machines Elec	Persons M	Persons F	Extent of use? Da.	Wk.	Mo.	
7 Telephone Switchbds.														
8 Cash Reg.														
9 Collating														
0 Postage Stmp.-Seal.														
OFILMING 1 Camera														
2 Projector (Reader)														
3 Automatic Retrieval														
6 Other														

1. How much skill is required?

2. How do you determine this skill? (Interview, test, application, etc.)

   If test: (a) Type of test (content, length in time, etc.)

   (b) Standards (how you evaluate)

   (c) At what level should this training be provided in your opinion?

   Jr. H.S. _____ Private Business School _____

   H. S. _____ Previous employer _____

3. If training is given: (a) how much? _____ (b) how long? _____

   (c) on what job _____ (d) how and by whom: _____

_____

4. Do you expect number of persons using these machines to

	Next yr?	Within 5 y
increase		
decrease		
remain same		

1. (a) Would you hire high school graduates if they have had no previous work experience? (Ages 16-22) _____Yes
_____No (Go to quest. 2)
_____Other_____

(b) If yes, how many: _____Male
_____Female
_____Both

2. (a) Within the past two years have you hired any high school graduates who have had no previous work experience? _____Yes
_____No (Go to quest. 4)

(b) If yes, how many: _____Male
_____Female

3. For what specific jobs were they employed? (Title and description of job)

4. (a) Do you expect to hire any high school graduates who had no previous work experience during the next year? (and why) _____Yes
_____No (Go to quest. 6)

(b) If yes, how many: _____Male
_____Female

5. For what specific jobs?_____
Don't know_____

6. How important do you feel these business subjects are as prerequisites for employment: (1-very important; 2-some value; 3-doubtful value)

Economics_____
Consumers Economics_____
Business Law_____
Business Organization & Mgmt._____
General Business_____
Bookkeeping_____
Economic Geography_____
Business English_____
Business Math_____
Merchandising_____
Office Practice_____
Salesmanship_____
Shorthand_____
Typing_____
Retailing_____
Other business machines_____
_____
_____

7. In your opinion, how adequately are h.s. graduates prepared?

Strengths_____

Weaknesses_____

Interviewer's general comments on interview: (State attitude, degree of cooperativeness, etc., of person(s) interviewed, as well as your feeling regarding the adequacy of the information obtained).

APPENDIX B

WAYNE STATE UNIVERSITY
College of Education
Department of Business
and Distributive Education
Detroit, Michigan 48202

OFFICE MACHINES INVENTORY

Interview Number: _____ Interviewer: _____

Company: _____

Address: _____

Telephone Number: _____ Extension: _____

Contact: Mr. Mrs. Miss _____

(Department) (Title)

Industry: _____

IF RESPONDENT DIFFERENT THAN CONTACT:

(Mr. Mrs. Miss) (Title)

(Department)

Report? Yes _____ No _____

Appointment: Date _____ Time _____ AM PM

Date of Interview: _____ Time Began _____ AM PM Time Completed _____ AM PM

Editing Time: _____

CALL BACKS

DATE	TIME	EXPLANATION

RVIEW NUMBER: _____

– OFFICE MACHINES INVENTORY

COULD YOU TELL ME HOW MANY OF THE FOLLOWING MACHINES YOU HAVE IN THIS COMPANY:

TOTAL NUMBER OF TYPEWRITERS; _____

Elite _____ Pica _____

Manual _____

Standard Electric _____

Executive (Proportional Spacing) _____

Selectric (Type Sphere, Stationary carriage) _____

Other (Specify Make):_____

_____ _____

TOTAL NUMBER OF ADDING-CALCULATORS: _____

Key-Driven (Comptometers, Burroughs--no tape) _____

Rotary (no tape, moving carriage; e.g. Friden) _____

Ten Key Adding _____

Ten Key Printing Calculators _____

Other (Specify Kind): _____

TOTAL NUMBER OF BILLING-BOOK-KEEPING MACHINES (Do not include attachments to electronic data processing equipment) _____

TOTAL NUMBER OF DUPLICATING MACHINES: _____

Fluid (Ditto) _____

Stencil (Mimeograph) _____

Offset (Multilith) _____

5. TOTAL NUMBER OF COPYING MACHINES: _____

(Identify by Trade Name)

_____ _____

_____ _____

_____ _____

_____ _____

6. TOTAL NUMBER OF DICTATION-TRANSCRIPTION MACHINES _____

(Identify by Trade Name)

_____ _____

_____ _____

_____ _____

_____ _____

7. Card Punch and Verifyers _____

8. Sorters _____

9. Collators _____

10. Reproducers _____

11. Accounting Machines (Tabulators) _____

12. Computers (Not Separate Parts) _____

(Identify by Name and Number of Main Component Only; e.g., IBM 1401)

_____ _____

_____ _____

_____ _____

_____ _____

INTERVIEWER: Ask questions for all machines you have checked;
Ignore machines that are not checked!

CHECK IF COMPANY HAS MACHINES	MACHINES: Ask only about those machines you have checked.	1. Approximately how many people do you employ who use the machines you have checked?	2. How many of these are females? How many are males?		3. Do you DEMAND that your operators have training or experience PRIOR to hiring them? (CIRCLE ONE)				4. In the next year, do you expect the number of people who use these machines to increase, decrease, or remain the same? (CIRCLE ONE)
			Females	Males	TRAINING		EXPERIENCE		
	Typewriters				Yes	No	Yes	No	Increase Decrease Same
	Adding-Calculators				Yes	No	Yes	No	Increase Decrease Same
	Billing-Bookkeeping				Yes	No	Yes	No	Increase Decrease Same
	Duplicating				Yes	No	Yes	No	Increase Decrease Same
	Copying				Yes	No	Yes	No	Increase Decrease Same
	Dictation-Transcribing				Yes	No	Yes	No	Increase Decrease Same
	Data Processing Equipment				Yes	No	Yes	No	Increase Decrease Same
	Computers				Yes	No	Yes	No	Increase Decrease Same

5. Do you have any machines for which you give formal on-the-job training? Yes_____ No_____

IF NO: Terminate interview.

IF YES: 5a. Which machines? _____

_____

_____

_____

_____

_____

APPENDIX C

Table I

Size and Type of Companies that have Adding/Calculators

Type of Company	Size of Company						
	Size Unspecified	Less than 4	4-19	20-99	100-499	More than 500	TOTAL
Agriculture, Forestries, and Fisheries	-	-	1	-	-	-	1
Construction	2	7	1	4	-	-	14
Manufacturing Durable	-	2	1	5	8	2	18
Manufacturing Nondurable	-	-	2	2	5	-	9
Transportation and Communication	-	4	1	-	1	-	6
Wholesale and Retail Trade	2	36	28	10	3	-	79
Finance, Insurance, and Real Estate	-	7	9	1	1	-	18
Business and Repair Services	-	7	3	1	-	-	11
Personal Services	-	4	2	3	-	-	9
Professional Services	2	7	5	1	1	1	17
Public Services	1	1	6	-	1	1	10
TOTAL	4	20	27	59	75	7	192

Table II

Size and Type of Companies that have Bookkeeping Machines

Type of Company	Size of Company						
	Size Unspecified	Less than 4	4-19	20-99	100-499	More than 500	TOTAL
Agriculture, Forestries, and Fisheries	-	-	-	-	-	-	-
Construction	1	-	-	1	-	-	2
Manufacturing Durable	-	-	-	1	7	1	9
Manufacturing Nondurable	-	-	1	-	2	-	3
Transportation and Communication	-	1	-	-	-	-	1
Wholesale and Retail Trade	1	3	7	5	3	-	19
Finance, Insurance, and Real Estate	-	-	2	1	1	-	4
Business and Repair Services	-	-	-	-	-	-	-
Personal Services	-	1	-	-	-	-	1
Professional Services	-	-	1	-	-	1	2
Public Services	1	-	-	-	-	1	2
TOTAL	3	5	11	8	13	3	43

Table III

Size and Type of Companies that have Copying Machines

Type of Company (Standard Industrial Classifications)	Size of Company by Number of Employees						
	0[a]	Less than 4	4-19	20-99	100-499	More than 500	Total by Type
Agriculture, Forestries, and Fisheries	-	-	1	-	-	-	1
Construction	1	1	1	1	-	-	4
Manufacturing Durable	-	-	1	5	8	2	16
Manufacturing Nondurable	-	-	-	-	4	-	4
Transportation and Communication	-	-	1	-	1	-	2
Wholesale and Retail Trades	1	-	4	3	2	-	10
Finance, Insurance, and Real Estate	-	1	5	1	1	-	8
Business and Repair Services	-	2	1	-	-	-	3
Personal Services	-	-	-	-	-	-	-
Professional Services	2	5	3	1	1	1	13
Public Services	1	-	2	-	-	1	4
Total by Size	5	9	19	11	17	4	65

[a]Size not specified.

Table IV.

Size and Type of Companies that have Dictation Machines

Type of Company (Standard Industrial Classifications)	Size of Company by Number of Employees						
	0[a]	Less than 4	4-19	20-99	100-499	More than 500	Total by Type
Agriculture, Forestries, and Fisheries	-	-	-	-	-	-	-
Construction	1	-	-	-	-	-	1
Manufacturing Durable	-	-	1	3	6	2	12
Manufacturing Nondurable	-	-	1	-	-	-	1
Transportation and Communication	-	-	-	-	1	-	1
Wholesale and Retail Trades	1	-	1	1	2	-	5
Finance, Insurance, and Real Estate	-	-	1	-	-	-	1
Business and Repair Services	-	1	1	-	-	-	2
Personal Services	-	-	-	-	-	-	-
Professional Services	-	2	3	1	-	1	7
Public Services	-	-	2	-	-	1	3
Total by Size	2	3	10	5	9	4	33

[a]Size not specified.

Table V

Type and Number of Typewriters by Size of Company

Size of Company by Number of Employees	Elite		Pica		Executive		Selectric		Flexowriter		Varityper		Teletyper		Total	
	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E
Size Unspecified	6	1	19	7	-	1	-	-	-	-	-	-	-	-	25	9
Less than 4	31	6	41	1	-	-	-	1	-	-	-	-	-	-	72	8
4-19	65	10	64	5	-	11	-	-	-	-	-	1	-	-	129	27
20-99	26	20	35	13	-	3	-	-	-	1	-	-	-	1	61	38
100-499	85	68	94	32	-	6	-	1	-	1	-	2	4	6	183	116
More than 500	71	14	33	18	-	8	-	2	-	1	-	-	-	3	104	46
Total	284	119	286	76	-	29	-	3	-	3	-	3	4	10	574	244
	N = 403		N = 363		N = 29		N = 3		N = 3		N = 3		N = 14			
	49%		44%		Less than 1%		Less than 1%		Less than 1%		Less than 1%		Less than 1%			

Table VI.

Types of Dictation Machines by Size of Company

Type of Machines	Size of Company by Number of Employees						
	Size Unspecified	Less than 4	4-19	20-99	100-499	More than 500	TOTAL
Comptometer	-	-	-	2	8	1	11
Dictaphone	7	2	10	9	25	5	58
Ediphone	-	-	2	-	3	12	17
IBM	-	-	-	1	-	-	1
Soundscriber	-	-	-	1	-	-	1
Stenorette	-	-	5	1	-	1	7
Unidentified	6	-	1	-	1	2	10
TOTAL	13	2	18	14	37	21	105

Table VII.

Types of Duplicating Machines by Size of Company

Size of Company by Number of Employees	Fluid	Stencil	Offset	Total
Size Unspecified	1	2	1	4
Less than 4	1	5	-	6
4-19	13	16	-	29
20-99	5	7	2	14
100-499	22	6	3	31
More than 500	9	2	1	12
Total	51	38	7	96

Table VIII

DISTRIBUTION OF COMPANIES BY TYPE THAT DO NOT HAVE TYPEWRITERS

TYPE OF COMPANY	NUMBER OF COMPANIES	NUMBER OF COMPANIES IN SAMPLE
Construction.....	2	18
Manufacturing: Durable.....	1	19
Manufacturing: Non-Durable.....	1	10
Transportation, Communication, and Other Public Utilities.....	1	7
Wholesale and Retail Trades.....	31	100
Finance, Insurance, and Real Estate.....	2	21
Business and Repair Services.....	7	19
Personal Services.....	8	15
Total.....	53	--

Table IX

Pre-Employment Training and Skills Demanded for the Nine Types of Machines Studied

Types of Machines	NUMBER OF COMPANIES				
	Number of Companies Answering	No Training Required	Training Required	DO NOT Have Machines	No Answer
Adding/Calculators	168	132	36	47	24
Billing-Bookkeeping	37	25	12	196	6
Copying	58	51	7	174	7
Dictation	31	19	12	206	2
Duplicating	54	45	9	175	10
EAM	7	6	1	230	2
EDP	--	--	--	238	1
Typewriters	168	59	109	53	18

Table X

Where Training Should be Provided by Types of Machines Studied

Institution	Adding/ Calculating	Billing-Bookkeeping	Copying	Dictating	Duplicating	EAM	EDP	Typewriters
NUMBER OF COMPANIES ANSWERING	38	12	8	14	14	2	1	104
Junior High School	-	-	-	-	-	-	-	3
High School	29	6	5	9	10	1	-	79
Private Business School	2	1	1	-	2	-	-	5
College	3	-	1	2	1	1	-	2
Previous Employer	1	-	-	-	-	-	-	-
High School, and Business School	2	1	-	3	-	-	-	8
High School and College	-	2	-	-	1	-	1	4
High School, Business School, and Previous Employer	-	-	-	-	-	-	-	2
High School, College, and Previous Employer	1	2	1	-	-	-	-	1

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Table XI

Size of Company and Plans to Add Machines Within Next Year

Size of Company by Number of Employees	Typewriters		Calculators		Bookkeeping		Duplicators		Copying		Dictation		EAM		EDP		Total	
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Unspecified N = 9		4	3	1	1	2		1	2	1	1						7	9
Less than 4 N =114	7	40	8	39	1	4	1	4	2	3		2					19	92
4-19 N =64	10	31	6	35	1	7	1	17	5	10	1	6	1	1		1	25	108
20-99 N =28	4	14	7	11		4	1	4	1	5	1	2		1			14	41
100-499 N =20	4	11	2	11	1	7	1	12		12	2	5	2	1	2		14	59
500 or above N = 4		2		2		1		2	1	2		1	2	1			3	11
Total	25	102	26	99	4	25	4	40	11	33	5	16	5	4	2	1	82	320
	N = 127		N = 125		N = 29		N = 44		N = 44		N = 21		N = 9		N = 3		N = 462	